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# Estimating Earnings Management Metrics and Examining Their Determinants and Impacts on Banks' Performance: Evidence from Banks Listed in the Saudi Capital Market

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## Article History

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## Abstract

The study aimed to estimate earnings management proxies and investigate their determinants and impacts on the performance of Saudi banks from 2013 to 2022. The study used the discretionary components of the loan and investment portfolio as a proxy for the earnings management index. The results showed that Saudi banks engaged in earnings Management downwards. Still, to a lesser extent, the actual provisions for loan losses exceeded the expected value of provisions for loan losses, and the residuals of the regression models were positive and had a normal distribution. Regarding the determinants of earnings management, financial leverage, bank size, net operating profits before loan provisions, and gross domestic product (GDP) were identified as significant factors. Regarding the impacts of earnings management proxies on banks' performance, the results showed that earnings management proxy as a mediator variable had no effect on return on assets or equity. However, earnings management as a mediator variable statistically affected the stock price, stock returns, and earnings per share. In addition, the results showed that Saudi banks utilized the signal theory to convey private information on discretionary components, creating a positive outlook for future years' profits and cash flow. Investors in the Saudi capital market responded positively to this private information when pricing stocks. The study's results are expected to have significant empirical implications for stakeholders, including capital market investors, regulatory authorities, bank managers, and external auditors. It provided reasonable evidence that Saudi banks are well-capitalized and that their managers did not use opportunistic practices to increase profits.

**Keywords:** Non-Performing Loans ; Normality Test; Investment Portfolio ; Signal Theory; Agency Theory.

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## 1. Introduction

Bank managers can exercise earnings management by using accounting choices or accruals to achieve the targeted earnings levels. In addition, bank managers can exercise earnings management by utilizing the discretionary components of the allocations for loan losses (ALL) to reduce earnings volatility over time. (McNichol & Wilson, 1988; Bhat, 1996) indicated that earnings management's motivation is to minimize income discrepancies to improve shareholder

wealth and increase compensation for top management, as evidenced by earnings percentages. (Degeorge *et al.*, 1999) noted that managers involved in managing earnings to increase their financial rewards by increasing earnings, using either the real transaction approach, such as sale and expense transactions, or the discretionary elements in the financial statements. Banks involved in earnings management realized higher earnings per share and higher price-to-earnings ratios than banks that had not engaged in earnings management. (Federal Reserve Bank of Atlanta, 2000) indicated that (ALL) formed during periods of high GDP to absorb the abnormal losses in periods of recession, and banks consider those allocations as a component of capital adequacy ratios. (Sutton, 1997) indicated that (ALL) contains two components. The first component is non-discretionary, reflecting specific characteristics in the non-performing loan portfolio quality, as the accrual basis is no longer used for non-performing loans. The second is the discretionary component, which relates to the overall loan portfolio. Several studies, such as (Anandarajan *et al.*, 2007; Beatty *et al.*, 2002) used the discretionary components of both loan and investment portfolios in earnings management.

### **Study's Problem**

The literature review identified several approaches to managing earnings, including the real transaction approach, specific accounting methods for reducing or increasing profits, the total accruals approach, and the specific accruals approach, which have been widely employed in managing bank earnings. Few studies have been conducted on earnings management in Saudi Arabia, such as those by (Showy, 2020; Habeas *et al.*, 2019; Habbash & Alghamdi, 2015). However, the current study did not find any quantitative study that addressed earnings management for Saudi banks using the specific accruals approach through the discretionary components of both loan and investment portfolios for Saudi-listed banks. Therefore, this study filled this research gap in the current literature. The study fills the research gap by examining the discretionary components of both loan and investment portfolios in earnings management, investigating the determinants of earnings management, and assessing the impacts of earnings management on performance indicators for Saudi banks, as well as how investors in the capital market respond to earnings management.

### **Study's Motivations**

The current study's motivation stems from the scarcity of research that utilizes the accruals of the discretionary component of loan and investment portfolios as a proxy for earnings management in Saudi-listed banks. Therefore, the current research has been conducted to estimate the earnings management metric using the specific accrual approach for banks listed in the Saudi capital market by comparing the actual value with the expected value of allocations for loan losses, and using the difference as a proxy for earnings management. In addition, the determinants of earnings management metrics are examined as the dependent variable, with bank-specific and macro-specific factors as the independent variables, and finally, examining the impacts of earnings

management metrics as the mediator variable, along with other control variables, on Saudi banks' performance metrics as the dependent variables.

### **Study's Importance**

The study gains importance from its findings. This is the first study to quantitatively address earnings management, aiming to answer the questions raised by the current study that have not been addressed in previous studies. In addition, the study is multifaceted. Therefore, the study's results are expected to have crucial implications for several stakeholders.

## **2. Theoretical Framework**

Several theories have been proposed to investigate the earnings management phenomenon. It has been noted that, under Positive Accounting Theory, managers tend to adopt opportunistic behavior (Mahjoub & Miloudi, 2015). The positive accounting theory relies on three factors. Compensation plans exist because managers engage in opportunistic behaviors to increase their earnings. In debt contracts, managers increase earnings to get favorable terms and reduce failure costs. In the political process, managers in large companies often utilize accounting options to reduce earnings, as these companies frequently attract scrutiny from politicians.

According to the opportunistic theory, grounded in agency theory, managers intentionally neglect normal activities to mislead users of financial statements and obtain personal gains. Examples of abnormal practices include reducing discretionary expenditures, such as spending on research and development, and granting high discounts (Roy Chowdhury, 2006). According to (Yimenuand & Surur, 2019), the agency theory assumes that managers maximize their interests at the expense of shareholders. According to agency theory, companies that investors overvalue manage their earnings upward to maintain the overvalued stock (Jensen, 2005). According to agency theory, a conflict of interest exists between the interests of managers, on the one hand, and the interests of investors and shareholders, on the other hand, as managers seek to use private information to achieve their interests. In contrast, shareholders work rationally to maximize their benefits. The agency theory leads to an information asymmetry problem, as managers have more access to private information and use it to achieve profit targets, as this behavior will inevitably be reflected in companies' profits (Leuz, *et al.*, 2003)

Other studies have employed the signal theory, which posits that managers convey internal information to investors to indicate the direction of future profits. According to (Spence, 1973), the signal theory suggests that managers disclose accounting information as a positive signal to the capital market. (Ahmed *et al.*, 1999; Darjezi, 2016). According to the signaling theory, managers in companies with strong financial performance engage in earnings management to reduce information asymmetry for investors in the financial markets and reassure them about future performance that will not deteriorate. In addition, according to signaling theory, managers engaged in earnings management signal internal information to investors in financial markets to give a positive view of future earnings. (Gunny, 2010). The Signal theory assumes that bank managers use provisions for loan losses as a tool to communicate information to several

stakeholders. Banks increase (ALL) to send a favorable signal about their future profits, thereby improving shareholders' confidence in the banks' financial stability. In addition, banks with poor performance engage in (EM) behaviors by reducing the amount of the provisions for loan losses (Ahmed & Courtis, 1999). The signal theory assumes that the voluntary disclosure of accurate, complete, and reliable information reduces information asymmetry between internal and external users (Kamron & Al Farooque, 2017). Banks manage earnings to increase shareholders' rights (Dye, 198; Degeorge *et al.*, 1999) provided Psychological evidence that individuals use overall rules to decrease the cost of information processing, as they showed that three limits exists for earnings, , Zero earnings, Last year's earnings, and analysts' predictions for earnings. In addition, (Barth *et al.*, 1999) noted that these limits are crucial for investors.

According to the theory of efficiency, there should be an association between accounting information and stock prices. However, some accounting information prepared and measured using the accrual basis has no impact on cash flows, and therefore, this information will not be reflected in stock prices (Bamber *et al.*, 2001). The hypothesis that academics rely on is that there is an information asymmetry between managers and investors. To address the information asymmetry, earnings management becomes a flexible tool that managers use to convey private information about the company's ability to generate future cash flows and its long-term strategy, within the limits permitted by law, to investors, thereby helping those better value stocks. Especially (Beaver, 1989) reported that accounting information no longer has any value to investors other than earnings per share

### **3. Literature Review**

This section discusses earnings management from multiple perspectives, including approaches to estimating earnings management, its determinants, and its effect on performance.

#### ***3.1 Approaches to Estimating Earnings Management***

Managers employ various earnings management strategies, including increasing or decreasing reported earnings. Researchers have conducted several studies on earnings management since the early 1970s and 1980s. Managers can practice earnings management by selecting among various accounting policies and methods, such as employing a specific depreciation calculation process and evaluating inventory, or determining provisions for loan losses. Managers focus on calculating total accrual by dividing earnings into a discretionary component and a non-discretionary component, as they can use the discretionary component to transfer earnings among accounting periods or postpone the recognition of spending (Healy, 1985; Jones, 1991; Dechow *et al.*, 1995; Sun & Rath, 2010). In addition, managers can manage earnings by using real transactions as stated by (Schipper, 1989), income smoothing as supported by (Imhoff, 1977), and benchmark beating as supported by (Burgstahler & Dichev, 1997). Managers manage earnings using specific accruals; unlike the total accruals approach, the particular accruals approach focuses on particular accruals of significant size that need substantial judgment by Management, such as loan provisions in the banking industry and loss reserves in the insurance

industry. (McNichols & Wilson, 1988) confirmed that managers managed earnings using provisions for loan losses. Previous studies employed the specific accruals approach because it is well-suited to the nature of banks' business and focuses on the discretionary component of loan allocations. They are the most significant and impact banks' profits, whether managers need to increase or decrease earnings. The remaining approaches to earnings management are suitable for all non-financial institutions.

Several indices have been used to identify and investigate earnings management exercises 'such as disclosing small positive earnings (Hassan & Profit, 2004). Stock prices absorb the risk premium of the volatilities in banks' profits (Kanagaretnam et al., 2004). Therefore, banks can increase stock prices and decrease the cost of funds by reducing the volatility in profits. Banks with high operating profits before earnings management can build the discretionary component in (ALL), and vice versa, for banks with small profitability before earnings management. (Disgorge *et al.*, 1999) investigated earnings management through (ALL), defining latent profits as those that appear when (ALL) is in the correct value. They noted that banks report a slight decrease in profits or a small increase in profits by comparing the profits of private and public banks. Additionally, they presented evidence that public banks engaged in earnings management to avoid lower earnings. (Burgstahler & Dichev, 1997; Barth *et al.*, 2008) Showed that reporting small positive net earnings is a sign of earnings management, as managers tend to report small positive earnings rather than negative ones. The reasons behind that are avoiding debt guarantees and realizing earnings targets to attain bonuses. (Leventis *et al.*, 2013) banks engaged in earnings management use (ALL) to manage capital and earnings. (Anandarajan et al., 2007) concluded that banks registered in capital markets were more engaged in earnings management than non-registered banks. In addition, the results showed that banks have not used (ALL) to signal any positive signals for future profits.

In three cases, regression residuals are used as a proxy for the discretionary component of loan and investment portfolios. In the first case, when the actual Value equals the expected value, the regression residuals will be zero; therefore, there is no earnings management. The second case occurs when the expected Value exceeds the actual Value; in this scenario, the residuals of the regression models will be negative, indicating that banks may engage in earnings management by inflating earnings through underestimating loan allocations. The third case is that the expected Value is less than the actual Value, and the regression residuals will be positive; that is, banks engaged in earnings management by reducing earnings via overestimating the discretionary components. Accepting the regression residuals as a proxy for earnings management requires that the regression residuals follow a normal distribution. Based on the literature review, earnings management is down only if the expected value of allocations for loan losses is less than the actual value for loan losses, and the regression residuals are positive. Based on the literature review, the study developed the following hypotheses:

1. A linear relationship exists between the actual allocations for loan losses as the dependent variable and the positive residuals with normal distribution as the independent variable.



2. A linear relationship exists between the investment portfolio's actual realized gains and losses as the dependent variable and the positive residuals with normal distribution as the independent variable.

### ***3.2. Determinants of Earnings Management***

(Salem *et al.*, 2020) concluded that the quality of voluntary disclosure resulted in a decrease in earnings management. (Dung, 2020) stated that public banks heavily involved in earnings management than private banks using (ALL). (Jin *et al.*, 2018) stated that banks with abnormal (ALL) before the crisis period 2007-2008 were involved in less risk before the crisis period. Therefore, banks were not exposed to the collapse during the crisis. Additionally, the discretionary component of ALL was not linked to avoiding losses in the upcoming period. As a result, the abnormal (ALL) has not been used in (EM). (Lassoued *et al.*, 2017) noted that banks with concentrated ownership have used the discretionary components in (ALL) to manage earnings. (Leventis & Dimitropoulos, 2012) concluded that Banks with good governance practices report a small growth rate in earnings relative to banks with poor governance practices. (Leventis *et al.*, 2011) concluded that banks that apply IFRS have improved the quality of earnings. (Liu & Rayan, 2006) concluded that banks with low earnings tend to manage profits upward by delaying recognition of the provisions for homogeneous loan losses. However, during the economic boom, banks with high profits reduce their profits by increasing provisions for loan losses on homogeneous loans or by increasing the rate of debt write-offs to offset bad debts collected from previous years' debts. Additionally, the amount of (ALL) is a function of several factors, as the estimation of (ALL) is sensitive to the operating profit before provisions for loan losses (Baker *et al.*, 2005), indicating that (ALL) is correlated with the economic cycle. Specifically, (ALL) is high when the GDP decreases, due to the increased risks involved in the loan portfolio. However, increasing (ALL) in years of high GDP can somewhat mitigate this adverse effect. (Alghemary, 2024) suggests that the parent companies have been more heavily engaged in earnings management through accruals than real operations. (Salem *et al.*, 2021) showed that the high quality of the discretionary disclosure reduced earnings management. Building on the literature review, the study developed the following sub-hypothesis:

3. A statistical relationship exists between earnings management metric as the dependent variable and bank size, capital adequacy ratio, financial leverage, net operating profit, GDP, retail loans, and corporate loans as the independent variables

### ***3.3. Impacts of Earnings Management on Performance***

(Aljifri & Elrazaz, 2024) examined the impact of earnings management on the quality of earnings and the sustainability of earnings for distressed and non-distressed companies in the Arabian Gulf region from 2011 to 2022. The results indicated that managing earnings through accruals has a negative impact on the quality of earnings and a positive effect on the sustainability of earnings. (Mohammad & AL-OWN, 2017) investigated the impact of (EM) on the return on equity and return on assets as dependent variables for 55 European banks from 2001 to 2015. The results

indicated that (EM) adversely affects return on equity and assets for the present and upcoming years. (Ponca *et al.*, 2023) examined the effect of the discretionary and non-discretionary components of loan provisions as the independent variables on the operational efficiency of banks as the dependent variable in the Eurozone after applying International Financial Reporting Standard No. 9. The results of the study indicated that the non-discretionary component of loan allocations has a positive impact on the allocative efficiency. In contrast, the discretionary component negatively impacted that efficiency. (Alhadab & AL-Own, 2017) examined the impact of earnings management on banks' performance. The results showed that banks in earnings management have recorded poor asset and equity returns for the current or future years.

(Narayan, 2013) examined the effect of earnings management and audit quality on companies' stock returns. The study employed the discretionary component estimated by the cross-sectional modified Jones (1991) model. Audit quality, as measured by the auditor's reputation, was used as the moderating variable, specifically whether the auditor belonged to the Big Four accounting firms. The study's results indicated that the earnings management index had a negative impact on companies' stock returns, and that audit quality improved the relationship between the earnings management index and stock returns. (Wu *et al.*, 2012) noted that earnings management has a negative impact on the returns of Taiwanese companies' shares. (Ihenyen 2020) reported that earnings management places enormous pressure on return on assets and return on equity, as there is a positive relationship between earnings management and firm performance. (Tochukwu & Emenike, 2018) reported that the earnings management index measured by the discretionary component has a negative impact on the return on assets, return on equity, and profit margin. (Dela & Luiz, 2015) reported that earnings management did not affect short-term stock returns. (Bhutto *et al.*, 2021) reported that a statistically significant and negative association exists between stock returns, as the dependent variable, and both real and accrual earnings management indices for listed companies on the Pakistan Stock Exchange. (Sayari *et al.* 2013) reported that discretionary accruals encourage Tunisian investors to evaluate their stocks better. Based on the literature review, the study developed the following sub-hypotheses:

4. The Earnings management metric has statistically significant impacts on return on assets
5. The earnings management metric has a statistically significant impact on return on equity.
6. The earnings management metric has a statistically significant impact on earnings per share.
- The earnings management metric has a statistically significant impact on share price.
7. The earnings management metric has a statistically significant impact on the returns of shares.

## 4. Methodology

### Sample, Data, and Method

The study applied to all registered banks on the Saudi capital market for 2013 - 2022. The required data to measure all the study's variables has been collected from the annual financial reports of the banks under study. The stock prices have been collected from the Saudi Stock Exchange's official website. The study used two proxies for earnings management. The first proxy uses both the discretionary component of the loan and investment portfolios. The second proxy uses only the



discretionary component of (ALL). The study uses the panel data methodology that combines both time series and cross-sectional data

### The First Proxy for (EM)

The first metric is the difference between the discretionary component of (ALL) and the discretionary component of the investment portfolio (Cornett et al., 2009). The first Model tests the first hypothesis.

Allocations for Loan Losses = Intercept + Non-Performing Loans + Change in the Non-Performing Loans + Loan Charge-Offs + Error Term (1)

**Table 1:** Variables Specifications –Model 1

Variable Name	Measurement
Non-performing loans	Beginning year non-performing loans balance deflated by the Beginning year loan portfolio balance
Change In The Non-Performing Loans	It is estimated by subtracting the end-of-year non-performing loan balance from the beginning-year loan portfolio balance, then deflated by the beginning-year loan portfolio balance.
Loan Charge-Offs	The beginning-of-year loan portfolio balance deflates the end-of-year loan charge-off balance.
Allocations For Loan Losses	The beginning-year loan portfolio balance deflates end-of-year allocations for Loan Losses.

The Loan charge-offs are correlated with (ALL), as loan charge-offs provide information about future collections from the loan portfolio (Kanagaretnam, *et al.*, 2010). The discretionary component of (ALL) is the residuals from the first model which will be deflated by the total loans to total assets ratio, as recommended by (Levitie & Dimitropoulos, 2012; Balti, 2009). They showed that accounting methods permit banks to manage earnings by classifying the investment portfolio into a trading and available-for-sale portfolio. If banks need to improve their profits, they can sell securities with unrealized gains, which are disclosed on the comprehensive income statement. On the other hand, if banks need to decrease profits, they can sell securities with unrealized losses on the comprehensive income statement. In addition, banks can manage earnings by adjusting their intention to retain them, as securities can be shifted from the trading classification to the available-for-sale classification and vice versa. The second model tests the second hypothesis.

Realized Gains and Losses = Intercept + Unrealized Gains and Loses + Error Term (2)

The realized gains reported on the income statements are divided by total assets. The unrealized gains and losses of the investment portfolio, reported on the comprehensive income statement, are also divided by total assets. The Error Term represents the second model's random errors, representing the investment portfolio's discretionary component. The first metric for (EM) is the difference between the random errors of the first and second models. The significant difference is

an indication of earnings management practices and vice versa. The third model estimates the first metric for earnings management:

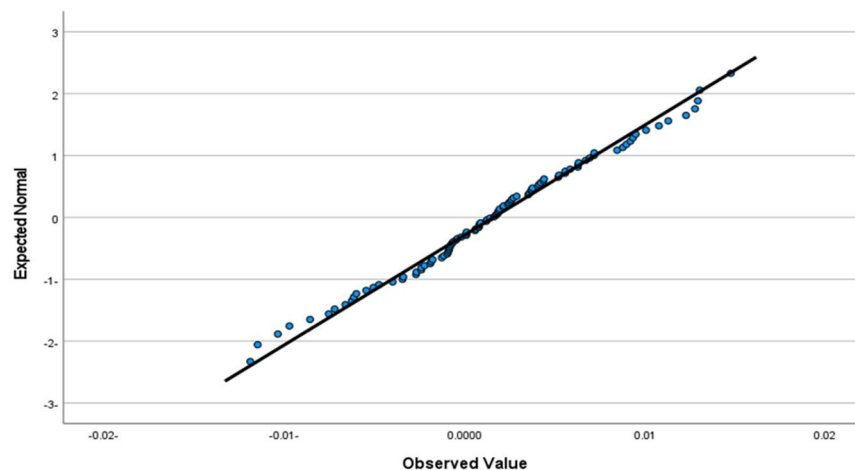
Earnings Management Metric = Residual of Model 1 - Residual of Model 2.

### Normality Tests

Relying on the residuals to capture the discretionary components requires that the Residuals from regression models meet the linearity condition for the first metric, representing the differences between the residuals from the first and second models. The Kolmogorov-Smirnov test statistic was 0.055,  $p = 0.200$ , and the Shapiro-Wilk test statistic was 0.990,  $p = 0.642$ , indicating that the residuals were normally distributed—statistic df Sig. The Q-Q plots for the residuals further corroborated the findings from the Kolmogorov-Smirnov and Shapiro-Wilk tests. For the first metric, the Q-Q plot displayed points closely aligned with the diagonal reference line, indicating that the residuals followed a normal distribution (Fig. 1). The Q-Q plots for the residuals further corroborated the findings from the Kolmogorov-Smirnov and Shapiro-Wilk tests. For the first metric, the Q-Q plot displayed points closely aligned with the diagonal reference line, indicating that the residuals followed a normal distribution.

**Table 2:** Kolmogorov-Smirnov & Shapiro-Wilk tests

Model	Kolmogorov-Smirnov tests			Shapiro-Wilk test		
	Statistic	df	Sig.	Statistic	df	Sig.
First Metric (Differences between Residuals from Models (1 And 2))	0.055	100	0.200*	0.990	100	.642



**Figure 1:** Q-Q plots for the residuals of the first metric model

The First Metric is the Difference between the residuals from the first and the second model, 0.055 (0.007159756- 0.00032233)

### Analysis of Results

According to Table 3, the regression analysis results showed that the first Model is statistically significant. The F-test recorded 443.391063, with a significance of  $1.61733 \times 10^{-60}$ . The model explained 93.7% of the variation in (ALL).

**Table 3:** Regression Model 1

Regression	Residual	Adjusted R Square	F	Significance F
0.132273825	0.007159756	0.93662981	443.391063	1.61733E-60

According to Table 4, the regression analysis result. This indicates that the second model is statistically significant, as evidenced by an F-test value of 14.34909337 with a significance level of  $3.47514 \times 10^{-6}$ . The model explained 0.93662981. The results showed that Saudi banks engaged in earnings management downwards to a very low degree, as the value of positive residuals was minimal, recording 0.007159756

**Table 4:** Regression Model 2

Regression	Residual	Adjusted R Square	F	Significance F
0.10227278	0.00032233	0.20841141	14.34909337	3.47514e-06

Testing Hypothesis (1): Based on the results, the study accepts the first hypothesis, as the residuals of the third model are positive and follow a normal distribution, indicating that banks in Saudi Arabia manage earnings downwards. The results showed that Saudi banks engaged in earnings management downwards to a very low degree using the discretionary components of the loan and investment portfolios, as the value of the positive residuals was very small, recording 0.00032233

### Determinants of Earnings Management

The earnings Management proxy from the third Model becomes the dependent variable in the fourth Model to determine factors affecting earnings management (Cornett et al., 2009; Beatty et al., 2002). The fourth Model tests the hypothesis (3)

Earnings Management = Intercept + Total Assets Capital Adequacy Ratio + Financial Leverage + Operating Profits before Taxes and Losses for Impairment. + Dummy + Retail Loans + Corporate Loans + Gross Domestic Product + Error Term (4)

**Table 5:** Variables Measurement –Model 4

Variable	Measurement
Total assets	The Bank size is the natural logarithm of total assets. According to (Cornett et al., 2009), big banks are less engaged in (EM)
Capital Adequacy Ratio	The Capital adequacy ratio is gathered from the banks' financial reports. The relationship of the capital adequacy ratio is unclear. Banks with a high capital adequacy ratio are more likely to engage in (EM) (Anandarajan et al., 2007). However, banks with a lower capital adequacy ratio tend to manage their earnings excessively to avoid penalties by the regulator (Cornett et al., 2009; Leventis & Dimitropoulos, 2012).

Financial leverage	Financial leverage is calculated as total obligations / total assets. According to (Cornett et al., 2009; Leventis & Dimitropoulos, 2012), banks with high leverage tend to manage earnings to achieve capital adequacy requirements.
Operating Profits Before Losses For Impairment.	Operating profits before impairment losses will be gathered from the bank's financial reports. The high operating profit level before loan allowances allows for managing earnings downwards, i.e., overestimating provisions. On the other hand, low operating profits offer the opportunity to manage profits upward by decreasing loan provisions.
Dummy	Dummy takes a value of 1 for Years after COVID-19 and zero for years before COVID-19 to capture the effects of the crisis on (EM).
Retail loans	Retail or consumer loans are divided by total loans. Retail loans are diversified and have a distinct risk structure compared to corporate loans. Therefore, Retail loans have impacts on the size of (ALL)
Corporate Loans	It is calculated as corporate loans divided by Total Loans. Corporate loans are concentrated loans that affect the size of (ALL).
Gross Domestic Product	GDP reflects the effects of cyclicity on (EM)
Earnings Management	Earnings management is calculated using the third model, specifically the difference between the absolute values of the residuals from the first and second models.

According to Table 6, the regression analysis results indicate that model 4 is statistically significant, as evidenced by an F-test value of 3.758451055 with a significance level of 0.000762998. The model explained 17.8% of the variation in earnings management. The financial leverage is statistically significant, with a positive t-test parameter indicating that banks with high leverage are more likely to engage in earnings management. The bank size is statistically significant, with a negative t-test parameter indicating that small banks were more heavily engaged in earnings management. Net operating profits before loan losses are statistically significant, with a positive t-test parameter indicating that banks with high Net operating profits engage in earnings management. GDP is statistically significant with a positive t-test parameter, indicating that banks engaged in earnings management during periods of economic prosperity. However, Dummy variables, capital adequacy ratio, and retail and corporate loans are statistically insignificant and therefore have no impact on earnings management.

**Table 6:** Model 4

Multiple R	Adjusted R Square	Standard Error	F	Significance F
0.496305657	0.178104469	0.00526758	3.758451055	0.000762998
ANOVA	Coefficients	Standard Error	t Stat	P-value
Financial leverage	0.02350	0.0074	2.883222	0.008
Total assets	-2.797787E-	8.55868E-	-3.18252	0.002
Capital Adequacy Ratio	-0.0001233	0.0003342	-0.61242874	0.547
Operating Profits Before Losses For Impairment.	8.08353E-10	3.1541E-10	2.55324657	0.011
Dummy	-1.33189E-	0.001228	-0.00107497	0.99
Gross Domestic Product	0.0355245	0.017067	2.150532509	0.034
Retail loans	-0.014053	0.007633	-1.95672080	0.051
Corporate Loans	-0.01887002	0.006411	-2.80160441	0.006

The results of Table 6 indicated that all variables except the capital adequacy ratio were statistically significant; therefore, hypothesis 3 was accepted.

### Impact (EM) Metric on the Saudi Banks' Performance

The study examined the effects of (EM) proxy as a mediator variable and other control variables as independent variables on banks' performance, which served as the dependent variable. The following regression models used the earnings management proxy as the mediator, with independent variables including profitability metrics and market-based indicators, and earnings management as the dependent variable.

Return on Assets = Earnings Management Proxy+ Bank Size +Capital Adequacy Ratio + Financial Leverage + Earnings before Provisions for Loan Losses + Dummy + Error Term (5)

Return on Equity = Earnings Management Proxy+ Bank Size +Capital Adequacy Ratio + Financial Leverage + Earnings before Provisions for Loan Losses + Dummy Error Term (6)

Earnings per Share = Earnings Management Proxy+ Bank Size +Capital Adequacy Ratio + Financial Leverage + Earnings before Provisions for Loan Losses + Dummy Error Term (7)

Share Price = Earnings Management Proxy Bank Size Capital AdequacyRatio+Finaacial Leverage + Earnings before Provisions for Loan Losses + Dummy +Error Term (8)

Share returns = Earnings Management Proxy+ Bank Size +Capital Adequacy Ratio+Finaacial Leverage + Earnings before Provisions for Loan Losses + Dummy +Error Term (9)

Table 7 shows the results of testing hypotheses 4, 5, 6, 7, 8. The results indicated that the earnings management index has no statistically significant impact on return on assets and equity; i.e., earnings management did not have substantial implications for banks' profitability in the same year. However, it has statistically significant impacts on earnings per share, which investors use to calculate the price-to-earnings ratio, Share Price, and share returns. In other words, Saudi banks use the discretionary components to signal a positive outlook on future profits. The financial leverage had a statistically significant, positive effect on the stock price. The results also showed that the size of the bank had a positive, statistically significant impact on all performance indicators, except for return on shares. The capital adequacy ratio had no statistically significant positive effect on all performance indicators, except for return on shares. The dummy variable had a negative, statistically significant impact on earnings per share and Share Price.

**Table 7:** Parameters of Models 5, 6, 7, 8, 9

	ROA model 5	ROE Model 6	EPS Model 7	Share Price Model 8	Share Returns Model 9
F-test	65.55805416	74.24504763	96.54582623	119.7758556	5.3103399
R Square	0.807119477	0.805848	0.842319251	0.86753880	0.2027861
Earnings Management	4.25843938 (4.87742E-)	5.52.16E- (0795713)	3.92991595 (0.00016225)	1.96385900 (0.05250078)	1.98928 (0.049576)
FL	4.94209551 (3.36012E-)	4.987605 (2.79E-06)	4.41533404 (2.69275E-5)	3.11864751 (0.00241180)	0.77953 (0.437625)
TA	3.01227051 (0.0033312)	2.868408 (0.005094)	2.5608166 (0.01203499)	2.55142811 (0.01234199)	1.43610 (0.154291)

CAR	1.002373906 (0.3187364)	0.478627 (0.633315)	1.21872100 (0.22599983)	-0.32477964 (0.74606954)	3.5402 (0.00062)
NPBTP	0.31376174 (0.7439722)	0.598476 (0.550962)	2.21824591 (0.02894610)	2.05395570 (0.04275675)	-0.9241 (0.357773)
Dummy	-1.5767020 (0.1182237)	-1.24335 (0.216832)	-2.83351170 (0.00563474)	4.62251251 (1.20614E-05)	-0.71441567 (0.4767405)

Testing of Hypothesis 4: Table 7 includes the results of testing Hypothesis 4. The study accepts Hypothesis 4 for EPS and Share Returns and rejects it for both ROA and ROE.

### Robustness Check

#### The Second Proxy for Earnings Management

The discretionary component of (ALL) is the standard index for earnings management in banks and is used by several studies, such as (Cheng et al., 2011; Zoubi et al., 2007; Kanagaretnam et al., 2004; Beaver & Engel, 1996; Anandarajan et al., 2007; Beatty et al., 2002; Leventis & Dimitropoulos, 2012). This requires separating (ALL) into two components: the discretionary component and the non-discretionary component. Therefore, the study used only the absolute residuals of the first model (Ben et al., 2014; Cheng et al., 2011; Zoubi et al., 2007). See details of the residuals in the appendix

### Analysis of Results

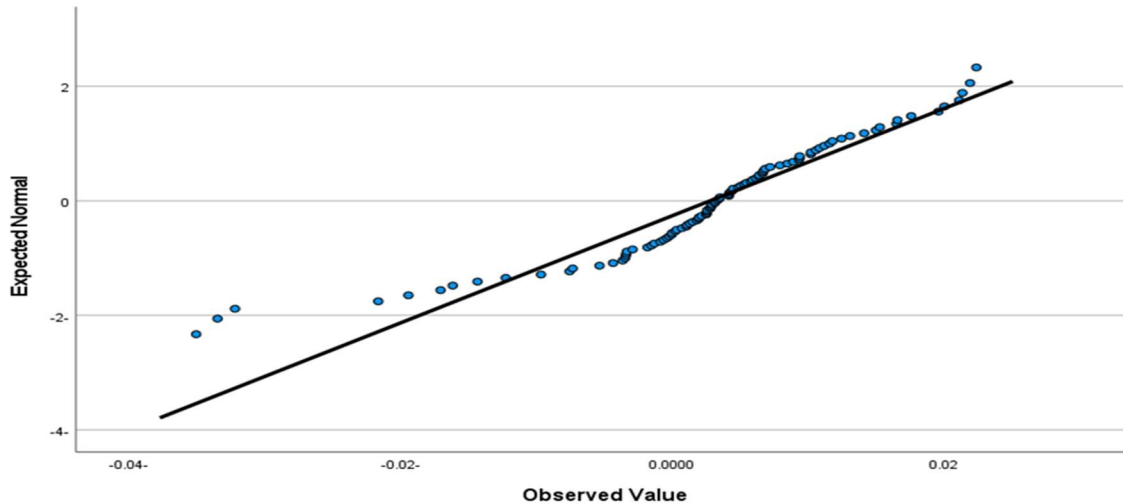
#### Normality Tests

For the second metric, representing residuals from the first Model, the Kolmogorov-Smirnov test statistic was 0.137 ( $p < 0.001$ ), and the Shapiro-Wilk test statistic was 0.905  $p < 0.001$ , suggesting a significant deviation from normality. In contrast, the Q-Q plot for the second metric revealed deviations from the reference line, implying that the residuals from Model 10 alone did not adhere to normality assumptions. These visual assessments align with the statistical test results. See the residuals in the appendix. Based on Model 7, the earnings management index does not follow the normal distribution. Therefore, the study could not rely on the model to draw any conclusions about earnings management, as the linearity of the residuals in the regression model is necessary.

**Table 8:** Kolmogorov-Smirnov & Shapiro-Wilk tests

Model	Kolmogorov-Smirnov test			Shapiro-Wilk test		
	Statistic	df	Sig.	Statistic	df	Sig.
Second Metric - Residuals From Models (1)	0.137	100	< 0.001	.905	100	< 0.001





**Figure 2:** Plots for the residuals of the second metric model

Based on the results, the study rejects the second hypothesis, as the positive residuals of the discretionary components of (ALL) do not follow a normal distribution. See the appendix. The results of the Robustness Check indicated that it is encouraged to rely solely on the discretionary component of the loan portfolio as an indicator of earnings management. Still, excluding the discretionary element from the investment portfolio is necessary to obtain an indicator that reflects a net earnings management proxy.

## 5. Discussion

The current study aims to examine the phenomenon of (EM), its determinants as a dependent variable, and its impact on the performance of Saudi banks as a mediator variable. The study employed the panel data method and regression models to test its hypotheses. The study used the discretionary components of both loan and investment portfolios as a proxy for earnings management. The results showed that Saudi banks engaged in earnings management downward, however, to a lesser extent, as the value of positive residuals was minimal, recording 0.007159756 and 0.00032233 for the loan and investment portfolios, respectively. The results differ from those of Liu & Rayan (2006), who said banks manage earnings upward.

Regarding the determinants of earnings management, the results showed that small banks and those with higher financial leverage were more likely to engage in (EM). On the other hand, periods of high GDP encouraged banks to overestimate discretionary components to manage earnings downwards rather than upwards. The results align with those of Baker et al. (2005), as the discretionary component is correlated with the economic cycle. High net operating profits before provisions for loan losses encouraged banks to overestimate the discretionary components to manage earnings downwards. The capital adequacy ratio did not impact earnings management; therefore, Saudi banks did not utilize (EM) to enhance their capital adequacy ratios. Literature review gives mixed results on the impact of the capital adequacy ratio on earnings management. Regarding the effects of the (EM) metric as a mediator variable, the (EM) proxy did not significantly affect the return on assets or equity. Therefore, Saudi banks did not use earnings management to improve return on assets or equity indicators. The results differ from those of

(Mohammad & AL-OWN, 2017) as (EM) negatively impacted the return on assets. Thus, no evidence suggests that managers employed agency theory to maximize profits. However, the results showed that the (EM) affected earnings per share, which is the primary accounting information investors use to value share prices, as Beaver (1989) supported. In addition, (EM) had statistically significant and positive impacts on share prices and returns. Therefore, Saudi banks employed earnings management to positively influence market performance. It can be concluded that Saudi banks employed a single theory to convey private accounting information to investors, thereby reducing information asymmetry and facilitating more informed share evaluations.

These results are surprising and differ from most previous studies, indicating that earnings management has a negative impact on stock returns (Narayan, 2013; Wu et al., 2012; DeLay & Luiz, 2015). The study results suggest that the earnings management strategy followed by the Saudi banks under study aims to give a positive signal about profits in the future rather than manage capital adequacy ratios by using the discretionary allocation components for loan losses as part of the regulatory capital, as Saudi banks maintain capital adequacy ratios that exceed the rates required by the regulatory authorities.

## **6. Recommendations and Future Studies**

Based on the study results, the study recommends expanding the scope of the current research by conducting a cross-country analysis to detect earnings management phenomena in the Gulf States and comparing the results to discover new dimensions. Future studies can examine the impact of lagged earnings management proxies on next year's profit indicators to determine whether Saudi banks employ earnings management to smooth income and mitigate fluctuations over time. Furthermore, future studies can utilize governance-based variables as potential determinants of earnings management. In addition, future studies can employ either stochastic or non-stochastic frontier methodologies to estimate cost and profit efficiency functions, rather than relying solely on accounting-based or market-based metrics for bank performance.

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Appendix

Second Metric - Residuals From Model ( 1)	First Metric model (3), the (Differences between Residuals from Models (1-2))
-0.012254352	-0.007526038
0.003462782	-0.001263826
0.001511228	-0.00239607
0.006761262	0.000110619
0.002922862	-0.002391685
0.001810067	-0.00038749
0.002788435	0.00011011
0.001293266	-0.002215406
-0.003468539	-0.00017419
-0.00535147	-0.000869167
-0.019421862	-0.011873583
0.001969682	-0.003436056
0.003128446	-0.005048728
0.009380811	-0.002668071
0.02192624	-0.001846173
0.005789768	0.005579832
0.00257787	0.002714318
0.022394792	-0.00339508
0.016584138	0.008780843
0.014130714	0.01129485
0.002505151	0.000790333
0.00529799	-0.00084543
0.004326422	0.001408428
0.003345299	0.001643535
-0.003649994	-0.0004754
0.002556827	0.0051985
-0.016159364	-0.011464268
-0.017053925	-0.006131965
0.007936246	0.006298875
0.005054217	0.009199733
0.004870108	0.003773732
0.004176184	0.003713512
0.006385759	0.01476498
0.008487812	0.004227022
0.000338044	0.005239966
-0.004354005	0.003717135
-0.007554616	-0.001894096
-0.000631656	-0.008561641
-0.003334778	0.001254614
-0.002914063	-0.001143476
0.001050861	0.002166797
0.003170291	0.002413447
0.00351518	0.00256671
0.006676494	0.001954219
0.010215564	0.004072613
0.01158577	0.012936627
-0.021645759	-0.010346486
-0.03504927	-0.009705644
-0.033477338	-0.006242261
-0.03218919	-0.007197435
0.005478401	0.001842309
0.010201946	0.006284274
0.010846308	

0.010584612	0.006717929
0.005919533	0.005854422
0.006162691	-0.000954226
0.006400421	0.001852244
-0.001820793	0.004410937
-0.009659973	0.000828268
0.004198984	-0.005450216
-4.43539E-05	0.004131416
0.006860126	-0.004739736
0.007204852	0.000890718
0.01180168	0.003537735
0.013093278	0.005585622
0.02004542	0.006940384
0.015285894	0.012777703
0.011192078	0.008976727
0.004208401	0.006327337
-0.000865225	0.004374171
-0.003417183	0.00215467
0.008909635	0.002472959
0.009373341	-0.005993321
0.009336736	0.009490168
0.015002951	0.007179958
0.021132532	0.007192266
0.017597017	0.010061854
0.021368179	0.009342632
0.019599844	0.012281994
0.01651913	0.013043461
0.002901195	0.010779348
-0.001314118	-0.003980183
-0.000226226	-0.001764052
-0.001529458	-0.000915065
0.000221928	-0.000694895
0.01246455	-0.002689404
0.006654043	0.008459479
0.001951421	0.003600905
0.004484339	-0.000815194
0.002567999	0.001910342
-0.000389529	0.000619553
0.004475311	0.000584714
0.001101604	0.002889969
0.002817991	0.000812845
0.002162144	9.93997E-05
0.00072398	0.001747363
-1.05877E-05	0.002623345
-0.003383377	0.001206178
-0.014335655	-0.000627595
-0.007327541	-0.006605202
	-0.000764771

## تقدير مؤشرات إدارة الأرباح ودراسة محدداته وأثاره على أداء البنوك: دليل من البنوك المدرجة في سوق المال السعودي

### المستخلص :

تهدف الدراسة إلى تقدير مؤشرات إدارة الأرباح ومحدداتها وتأثيراتها على أداء البنوك السعودية للفترة من 2013 إلى 2022. استخدمت الدراسة المكون الاختياري لكل من محفظة القروض والمحفظة الاستثمارية كمؤشر لإدارة الأرباح. هذا، وقد استخدمت الدراسة أسلوب البيانات الجدولية ونماذج الانحدار لاختبار فرضيات الدراسة. اشارت نتائج الدراسة الى ان البنوك السعودية محل الدراسة قد انخرطت في إدارة الأرباح الى الأدنى وبدرجة أقل، حيث كانت المخصصات الفعلية لخسائر القروض أكبر من القيمة المتوقعة لمخصصات خسائر القروض، وكانت بواقي نماذج الانحدار موجبة وذات توزيع طبيعي. أما بالنسبة لمحددات إدارة الأرباح، فقد كانت الرافعة المالية، وحجم البنك، وصافي الأرباح التشغيلية قبل مخصصات القروض، والنتائج المحلي الإجمالي، من المحددات ذات الدلالة الإحصائية لإدارة الأرباح. اما بالنسبة لتأثيرات مؤشر إدارة الأرباح كمتغير وسيط على أداء البنوك، اشارت النتائج الى أن مؤشر إدارة الأرباح كمتغير وسيط ليس له أي تأثير ذي دلالة إحصائية على العائد على الأصول أو العائد على حقوق الملكية. في حين اشارت النتائج الى ان مؤشر ادارة الأرباح كمتغير وسيط له تأثيرات ذات دلالة إحصائية على سعر السهم، وعوائد الأسهم، وربحية السهم. اشارت النتائج الى أن البنوك السعودية تبنت نظرية الإشارة لإيصال معلومات خاصة عن المكون لاختياري لمحفظة القروض لخلق نظرة مستقبلية إيجابية للأرباح والتدفقات النقدية في الأعوام المقبلة، هذا، وقد استجاب المستثمرون في سوق رأس المال السعودي بطريقة إيجابية لتلك المعلومات الخاصة عن المكون الاختياري عند تسعير الأسهم. انه من المتوقع ان تكون لنتائج الدراسة تأثيرات عملية إيجابية على المستثمرين في سوق المال والسلطات الرقابية ومديري البنوك وواضعي المعايير المحاسبية والمدققين الخارجيين، حيث قدمت الدراسة دليلا عمليا معقولا يشير الى ان البنوك السعودية لديها مخصصات قروض كافية وان المديرين بالبنوك السعودية لم ينخرطوا في اية ممارسات انتهازية لزيادة الأرباح.

**الكلمات المفتاحية:** القروض التي لا تدر عائد؛ اختبار التوزيع الطبيعي ؛ المحفظة الاستثمارية ؛ نظرية الإشارة ؛ نظرية الوكالة.